

What is claimed is:

1. A mounting apparatus comprising:

a first block securable within a housing, the first block having first and second grooves for respectively receiving a first edge of a first circuit board and a first edge of a second circuit board such that the first and second circuit boards are aligned with each other and are spaced apart; and

a second block securable within the housing, the second block having a groove for receiving a second edge of the first circuit board that is perpendicular to the first edge of the first circuit board, the second block having a surface to which the second circuit board is attached adjacent a second edge of the second circuit board that is perpendicular to the first edge of the second circuit board.

2. The apparatus of claim 1, wherein the first block comprises a plurality of first blocks.

3. The apparatus of claim 1, wherein the second block comprises a plurality of second blocks.

4. The apparatus of claim 1, wherein at least one of the first and second grooves in the first block is tapered.

5. The apparatus of claim 1, wherein the surface of the second block comprises a surface of a projection of the second block, the projection having an aperture passing therethrough.

6. The apparatus of claim 5, wherein the aperture is threaded.

7. The apparatus of claim 5, wherein the aperture aligns with an aperture in the second circuit board and a fastener passes through the aperture in the second circuit board and into the aperture in the projection of the second block to secure the second circuit board to the second block.

8. The apparatus of claim 1, wherein at least one of the first and second blocks comprises a hole passing therethrough for receiving a fastener for securing at least one of the first and second blocks to the housing.

9. The apparatus of claim 8, wherein the hole is elongated.

10. A mounting apparatus comprising:

a plurality of first blocks securable within a housing, each of the plurality of first blocks having first and second tapered grooves for respectively grasping a first edge of a first circuit board and a first edge of a second circuit board such that the first and second circuit boards are aligned with each other and are spaced apart; and

a plurality of second blocks securable within the housing, each of the plurality of second blocks having a slot for receiving a second edge of the first circuit board that is perpendicular to the first edge of the first circuit board, each of the plurality of second blocks having a surface to which the second circuit board is attached adjacent a second edge of the second circuit board that is perpendicular to the first edge of the second circuit board.

11. The apparatus of claim 10, wherein the surface of each of the plurality of second blocks comprises a surface of a projection of each of the plurality of second blocks, the projection of each of the plurality of second blocks having an aperture passing therethrough.

12. The apparatus of claim 11, wherein the aperture of the projection of each of the plurality of second blocks is threaded.

13. The apparatus of claim 11, wherein the aperture of the projection of each of the plurality of second blocks respectively aligns with one of a plurality of apertures in the second circuit board and a fastener passes through each of the plurality of apertures in the second circuit board and into the aperture of the projection of each of the plurality of second blocks to secure the second circuit board to each of the plurality of second blocks.

14. The apparatus of claim 10, wherein each of the plurality of first blocks comprises an elongated hole passing therethrough for receiving a fastener for securing each of the plurality of first blocks to the housing.

15. The apparatus of claim 10, wherein each of the plurality of second blocks comprises an elongated hole passing therethrough for receiving a fastener for securing each of the plurality of second blocks to the housing.

16. A mounting apparatus comprising:

a first block securable within a housing, the first block having first and second tapered grooves for respectively grasping a first edge of a first circuit board and a first edge of a second circuit board such that the first and second circuit boards are aligned with each other and are spaced apart; and

a second block securable within the housing, the second block having a groove for receiving a second edge of the first circuit board that is perpendicular

to the first edge of the first circuit board, the second block comprising a projection having a surface and an aperture passing through the projection;

wherein the aperture in the projection of the second block aligns with an aperture in the second circuit board and a fastener passes through the aperture in the second circuit board and into the aperture in the projection of the second block to secure the second circuit board to the surface of the projection adjacent a second edge of the second circuit board that is perpendicular to the first edge of the second circuit board.

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17. A mounting block comprising:

a first wall having a face;

the face having a first groove for receiving an edge of a first circuit board;

the face having a second groove spaced from and parallel to the first groove for receiving an edge of a second circuit board;

a base perpendicular to the first wall, the base having a hole passing therethrough for receiving a fastener for securing the mounting block to a surface; and

a pair of opposing second walls perpendicular to the first wall and the base, the first wall, base, and pair of opposing second walls defining a cavity within the mounting block for providing access to the hole passing through the base.

18. The mounting block of claim 17, wherein the cavity is substantially triangular.

19. The mounting block of claim 17, wherein the cavity has an opening.

20. The mounting block of claim 17, wherein at least one of the first and second grooves is tapered.

21. The mounting block of claim 19, wherein the opening lies in a plane that makes an acute angle with the base.

22. A mounting block comprising:

a first wall having a face;

the face having a first tapered groove for grasping an edge of a first circuit board;

the face having a second tapered groove spaced from and parallel to the first groove for grasping an edge of a second circuit board;

a base perpendicular to the first wall, the base having a hole passing therethrough for receiving a fastener for securing the mounting block to a surface; and

a pair of opposing second walls perpendicular to the first wall and the base, the first wall, base, and pair of opposing second walls defining a substantially triangular cavity within the mounting block for providing access to the hole passing through the base, the substantially triangular cavity having an opening.

23. A mounting block comprising:

a first wall having a face, the face having a groove for receiving an edge of a first circuit board;

a projection on the face having a surface parallel with and spaced from the groove, the projection having an aperture passing therethrough for receiving a fastener for securing a second circuit board to the surface; and

a base perpendicular to the first wall, the base having a hole passing therethrough for receiving a fastener for securing the mounting block to a housing.

24. The mounting block of claim 23, wherein the aperture is threaded.

25. The mounting block of claim 23, and further comprising a pair of opposing second walls perpendicular to the first wall and the base.

26. The mounting block of claim 25, wherein the first wall, base, and pair of opposing second walls define a cavity within the mounting block.

27. The mounting block of claim 26, wherein the cavity is substantially triangular.

28. The mounting block of claim 26, wherein the cavity has an opening.

29. The mounting block of claim 28, wherein the opening lies in a plane that makes an acute angle with the base.

30. The mounting block of claim 23, and further comprising a tiered surface, wherein the surface of the projection is integral with the tiered surface.

31. A mounting block comprising:

a first wall having a face, the face having a groove for receiving an edge of a first circuit board;

a projection on the face having a surface parallel with and spaced from the groove, the projection having an aperture passing therethrough for receiving a fastener for securing a second circuit board to the surface;

a base perpendicular to the first wall, the base having a hole passing therethrough for receiving a fastener for securing the mounting block to a housing; and

a pair of opposing second walls perpendicular to the first wall and the base, the first wall, base, and pair of opposing second walls defining a cavity within the mounting block for providing access to the hole passing through the base.

32. The mounting block of claim 31, wherein the cavity is substantially triangular and has an opening in a plane that makes an acute angle with the base.

33. The mounting block of claim 31, and further comprising a tiered surface, wherein the surface of the projection is integral with the tiered surface.

34. A mounting block comprising:

a first wall having a face, the face having a groove for receiving an edge of a first circuit board;

a projection on the face having a surface parallel with and spaced from the groove, the projection having an aperture passing therethrough for receiving a fastener for securing a second circuit board to the surface;

a tiered surface having first and second surfaces, the first surface of the tiered surface integral and substantially flush with the surface of the projection, the first surface for receiving a portion of the second circuit board;

a base perpendicular to the first wall, the base having a hole passing therethrough for receiving a fastener for securing the mounting block to a housing; and

a pair of opposing second walls perpendicular to the first wall and the base, the first wall, base, and pair of opposing second walls defining a cavity within the mounting block for providing access to the hole passing through the base.

35. A method for mounting circuit boards within a housing, the method comprising:

receiving a first edge of a first circuit board within a first groove in a first block;

receiving a first edge of a second circuit board within a second groove in the first block such that the first and second circuit boards are aligned with each other and are spaced apart;

receiving a second edge of the first circuit board that is perpendicular to the first edge of the first circuit board within a groove in a second block;

securing the second circuit board adjacent a second edge of the second circuit board that is perpendicular to the first edge of the second circuit board to a surface of the second block; and

securing the first block and the second block to the housing.

36. The method of claim 35, and further comprising plugging the first circuit board into a third circuit board.

37. The method of claim 35, and further comprising plugging the second circuit board into a third circuit board.



38. The method of claim 35, and further comprising mounting a third circuit board on the first circuit board so that the third circuit board is between the first and second circuit boards.

39. The method of claim 35, and further comprising securing the first circuit board to a plurality of first spacers.

40. The method of claim 39, wherein securing the first circuit board to a plurality of spacers is accomplished using a plurality of second spacers.

41. The method of claim 40, and further comprising mounting a third circuit board on the plurality of second spacers so that the third circuit board is between the first and second circuit boards.

42. The method of claim 35, wherein receiving the first edge of the first circuit board within the first groove in a first block comprises the first groove having a taper that grasps the first edge of the first circuit board.

43. The method of claim 35, wherein receiving a first edge of a second circuit board within the second groove in the first block comprises the second groove having a taper that grasps the first edge of the second circuit board.

44. The method of claim 35, wherein securing the first and second blocks to the housing comprises adjustably positioning at least one of the first and second blocks.

45. The method of claim 35, wherein securing the second circuit board comprises using a fastener.

46. The method of claim 35, wherein securing the second circuit board comprises passing a fastener through an aperture in the second circuit board and into an aperture on the surface of the second block.

47. A method for mounting circuit boards within a housing, the method comprising:

securing a first edge of a first circuit board within a first tapered groove in each of a plurality of first blocks;

securing a first edge of a second circuit board within a second tapered groove in each of the plurality of first blocks such that the first and second circuit boards are aligned with each other and are spaced apart;

receiving a second edge of the first circuit board that is perpendicular to the first edge of the first circuit board within a groove of each of a plurality of second blocks; and

securing the second circuit board adjacent a second edge of the second circuit board that is perpendicular to the first edge of the second circuit board to a surface of each of the plurality of second blocks using a fastener.

48. The method of claim 47, and further comprising mounting a third circuit board on the first circuit board so that the third circuit board is spaced between the first and second circuit boards.

49. The method of claim 47, and further comprising securing the first circuit board to a plurality of spacers.

50. A method for mounting circuit boards within a housing, the method comprising:

securing a first circuit board to a plurality of first spacers using a plurality of second spacers;

securing a second circuit board to the plurality of second spacers so that the second circuit board is aligned with and spaced apart from the first circuit board;

receiving a first edge of the first circuit board within a first groove of a first block;

receiving a first edge of a third circuit board within a second groove of the first block such that the first, second, and third circuit boards are aligned with each other and are spaced apart and such that the second circuit board is located between the first and third circuit boards;

securing the first block to the housing;

receiving a second edge of the first circuit board that is perpendicular to the first edge of the first circuit board within a groove of a second block;

securing the third circuit board adjacent a second edge of the third circuit board that is perpendicular to the first edge of the third circuit board to a surface of the second block; and

securing the second block to the housing.

51. The method of claim 50, wherein securing the first block to the housing comprises adjusting the position of the first block.

52. The method of claim 50, wherein securing the second block to the housing comprises adjusting the position of the second block.

53. An electronic module, comprising:

a housing;

a first block secured in the housing, the first block having first and second grooves;

a second block secured in the housing, the second block having a groove and a surface;

a first circuit board having a first edge and a second edge perpendicular to the first edge, the first edge of the first circuit board located in the first groove of the first block and the second edge of the first circuit board located in the groove of the second block; and

a second circuit board having a first edge and a second edge perpendicular to the first edge of the second circuit board, the first edge of the second circuit board located in the second groove of the first block, and the second circuit board secured to the surface of the second block adjacent the second edge of the second circuit board, wherein the first and second circuit boards are aligned with and spaced apart from each other.

54. The electronic module of claim 53, wherein at least one of the first and second grooves of the first block is tapered.

55. The electronic module of claim 53, wherein the first circuit board is secured to a plurality of spacers that are secured to the housing.

56. The electronic module of claim 53, and further comprising a third circuit board mounted on the first circuit board so that the third circuit board is aligned with and spaced between the first and second circuit boards.

57. The electronic module of claim 56, wherein the third circuit board is secured to a plurality of spacers.

58. The electronic module of claim 53, wherein the surface of the second block comprises a surface of a projection of the second block, the projection having an aperture passing therethrough.

59. The electronic module of claim 58, wherein the aperture is threaded.

60. The electronic module of claim 58, wherein the aperture aligns with an aperture in the second circuit board and a fastener passes through the aperture in the second circuit board and into the aperture in the projection of the second block to secure the second circuit board to the second block.

61. The electronic module of claim 53, wherein the first block comprises a plurality of first blocks.

62. The electronic module of claim 53, wherein the second block comprises a plurality of second blocks.

63. The electronic module of claim 53, wherein at least one of the first and second blocks comprises a hole passing therethrough for receiving a fastener for securing at least one of the first and second blocks to the housing.

64. The electronic module of claim 63, wherein the hole is elongated.

65. The electronic module of claim 53, wherein the first board is connected to a fourth circuit board.

66. The electronic module of claim 56, wherein the second circuit board is connected to a fourth circuit board.

67. The electronic module of claim 56, wherein the third circuit board is connected to a receptacle.

68. The electronic module of claim 56, wherein the third circuit board is electrically connected to the first circuit board.

69. The electronic module of claim 53, wherein the first circuit board is a cable modem termination system circuit board.

70. The electronic module of claim 53, wherein the first circuit board transmits and receives digital data packets.

71. The electronic module of claim 53, wherein the second circuit board outputs signals.

72. The electronic module of claim 53, wherein the second circuit board receives data packets from a data network and outputs data packets to the data network.

73. The electronic module of claim 56, wherein the third circuit board receives and transmits radio frequency signals.

74. The electronic module of claim 53, and further comprising a power supply mounted in the housing.

75. The electronic module of claim 56, wherein the third circuit board converts analog signals into digital data packets.

76. An electronic module, comprising:

a housing having a base;

a plurality of first spacers protruding from the base;

a first block secured to the base, the first block having first and second tapered grooves;

a second block secured in the housing, the second block having a groove and a surface;

a first circuit board having a first edge and a second edge perpendicular to the first edge, the first edge of the first circuit board secured in the first tapered groove of the first block and the second edge of the first circuit board located in the groove of the second block, the first circuit board also secured to the plurality of first spacers by a plurality of second spacers;

a second circuit board having a first edge and a second edge perpendicular to the first edge of the second circuit board, the first edge of the second circuit board secured in the second groove of the first block, and the second circuit board secured to the surface of the second block adjacent the second edge of the second circuit board, wherein the first and second circuit boards are aligned with and spaced apart from each other; and

a third circuit board mounted on the first circuit board and secured to the plurality of second spacers so that the third circuit board is aligned with and spaced between the first and second circuit boards.

77. A cable modem termination system, comprising:

a housing;

a first block secured in the housing, the first block having first and second grooves;

a second block secured in the housing, the second block having a groove and a surface;

a first circuit board for receiving first digital data packets and second digital data packets and transmitting the first digital data packets and the second digital data packets, the first circuit board having a first edge and a second edge perpendicular to the first edge, the first edge of the first circuit board located in the first groove of the first block and the second edge of the first circuit board located in the groove of the second block;

a second circuit board for receiving the first digital data packets from the first circuit board and outputting the first digital data packets and for receiving the second digital data packets and transmitting the second digital data packets to the first circuit board, the second circuit board having a first edge and a second edge perpendicular to the first edge of the second circuit board, the first edge of the second circuit board located in the second groove of the first block, and the second circuit board secured to the surface of the second block adjacent the second edge of the second circuit board, wherein the first and second circuit boards are aligned with and spaced apart from each other; and

a third circuit board for receiving a first analog signal from a cable modem, converting the first analog signal into the first digital data packets, and transmitting the first digital data packets to the first circuit board and for receiving the second digital data packets from the first circuit board, converting the second digital data packets into a second analog signal, and transmitting the second analog signal to the cable modem, the third circuit board mounted on first circuit board so that the third circuit board is aligned with and spaced between the first and second circuit boards.



78. The cable modem termination system of claim 77, wherein at least one of the first and second grooves of the first block is tapered.

79. The cable modem termination system of claim 77, wherein the first circuit board is secured to a plurality of spacers that are secured to the housing.

80. The cable modem termination system of claim 77, wherein the third circuit board is secured to a plurality of spacers.

81. The cable modem termination system of claim 77, wherein the surface of the second block comprises a surface of a projection of the second block, the projection having an aperture passing therethrough.

82. The cable modem termination system of claim 81, wherein the aperture is threaded.

83. The cable modem termination system of claim 81, wherein the aperture aligns with an aperture in the second circuit board and a fastener passes through the aperture in the second circuit board and into the aperture in the projection of the second block to secure the second circuit board to the second block.

84. The cable modem termination system of claim 77, wherein the first block comprises a plurality of first blocks.

85. The cable modem termination system of claim 77, wherein the second block comprises a plurality of second blocks.

86. The cable modem termination system of claim 77, wherein at least one of the first and second blocks comprises a hole passing therethrough for receiving a fastener for securing at least one of the first and second blocks to the housing.

87. The cable modem termination system of claim 86, wherein the hole is elongated.

88. The cable modem termination system of claim 77, wherein the first and third circuit boards are connected to a fourth circuit board.

89. The cable modem termination system of claim 77, wherein the second circuit board is connected to a receptacle.

90. The cable modem termination system of claim 77, wherein the first and second analog signals are radio frequency signals.

91. The cable modem termination system of claim 77, wherein the second circuit board outputs the first digital data packets to a data network and receives the second digital data packets from the data network.